

Patent Claims

1. A brush head for a toothbrush, which includes a handpiece with a drive mechanism for the brush head, with an in particular disk- or plate-shaped bristle support (2) which carries an array of bristles (11), is mounted for movement on a brush head support (3) and includes connecting elements (7) for coupling to the drive mechanism in the handpiece of the toothbrush, said bristle support (2) being divided into several bristle support segments (8; 9) movable relative to each other, and with driving elements (13; 19) changing the position of the bristle support segments (8; 9) relative to each other in dependence upon the position of said bristle support (2), characterized in that said driving elements (13; 19) comprise a cam control surface (14; 20) as well as an engagement element (15; 21) cooperating therewith, which are provided on the brush head support (3) and at least one bristle support segment (9).

2. The brush head as claimed in the preceding claim wherein the entire bristle support (2) is mounted for rotation about an axis of rotation (6), in particular in a direction transverse to the brush head longitudinal direction, being in particular adapted to be driven in an oscillatory rotational motion, and wherein the cam control surface (14; 20) is arranged on an arc about the axis of rotation (6), being in particular formed on the brush head support (3).

3. The brush head as claimed in any one of the preceding claims wherein several bristle support segments (9), preferably one pair of bristle support segments (9) arranged at diametrically opposite sides are adapted to be driven in dependence upon the rotary position of the bristle support (2), with the cam control surface (14; 20) including several sections, whereof a respective one of said sections being associated with one of the drivable bristle support segments (9).

4. The brush head as claimed in any one of the preceding claims wherein the driving elements (19) are constructed as a positive control, such that the cam control surface (20) and the engagement element (21) cooperating therewith are always in relative engagement and act in opposed directions of movement.

5. The brush head as claimed in any one of the preceding claims 1 to 3 wherein the cam control surface (14) and the engagement element (15) cooperating therewith are disengageable from each other and maintained in relative engagement by reaction forces developing while brushing the teeth.

6. The brush head as claimed in any one of the preceding claims wherein the construction of the driving elements (13; 19) and the mounting of the bristle support segments (9) adapted to be driven by said driving elements are such that on rotation of the bristle support (2) about its axis of rotation (6) at least part of said bristle support segments (9) executes a poking motion in the direction of the axis of rotation (6).

7. The brush head as claimed in any one of the preceding claims wherein the bristle support (2) has a neutral position from which it is drivable in oscillatory manner in opposite directions, and the cam control surface (14) is configured such that the respective bristle support segment (9) driven by the cam control surface assumes a maximum stroke position in the neutral position of the bristle support (2) while occupying a minimum stroke position when the displacement of the bristle support (2) from its neutral position is at its maximum.

8. The brush head as claimed in any one of the preceding claims 1 to 6 wherein the bristle support (2) has a neutral position from which it is drivable in oscillatory manner in opposite directions, and the cam control surface (20) is configured such that the respective bristle support segment (9) driven by the cam control surface assumes a minimum stroke position in the neutral position of the bristle support (2) while occupying a maximum stroke position when the displacement of the bristle support (2) from its neutral position is at its maximum.

9. The brush head as claimed in any one of the preceding claims wherein several bristle support segments (9) are raised by corresponding cam control surfaces (14; 20) in the same timed sequence.

10. The brush head as claimed in any one of the preceding claims wherein the bristle support (2) includes bristle support segments (9) mounted for swivel movement about a swivel axis (10; 18) extending in particular in a direction approximately transverse to the bristle support's axis of rotation (6).

11. The brush head as claimed in any one of the preceding claims wherein the bristle support (2) includes at least one bristle support segment (9) sitting on a radially extending swivel axis (18), such that bristles sitting on the bristle support segment (9) swivel in a plane tangential to the circumferential direction of the bristle support (2).

12. The brush head as claimed in claim 10 wherein the bristle support (2) includes at least one bristle support segment (9) mounted for swivel movement about a

transverse axis (10) extending in a direction transverse to the bristle support segment, such that bristles (16) sitting on the bristle support segment (9) swivel in or parallel to a radial plane containing the axis of rotation (6) of the bristle support (2).

13. The brush head as claimed in any one of the preceding claims wherein the cam control surface (14; 20) is formed directly by a surface of the brush head support (3), in particular by a section of the brush tube and/or a bristle support mounting structure (5) of the brush head support (3).

14. The brush head as claimed in any one of the preceding claims 1 to 12 wherein the cam control surface (14; 20) is formed by an element separate from, and fixedly connected with, the brush head support (3).

15. The brush head as claimed in any one of the preceding claims wherein the engagement element (21) associated with the cam control surface (20) forms a curved engagement surface that is curved in the same direction and with about the same curvature radius as the cam control surface.

16. The brush head as claimed in any one of the preceding claims 1 to 14 wherein the cam control surface (14) includes at least two concave depressions and a protuberance connecting said depressions, and the engagement element (15) forms a curved engagement surface whose curvature corresponds approximately to one of said depressions.

17. The brush head as claimed in any one of the preceding claims wherein the driving elements (13; 19) and the bristle support segments (9) driven by said driving elements lie approximately in the region of the longitudinal axis of the brush head when the bristle support (2) is in a non-displaced position.

18. The brush head as claimed in any one of the preceding claims wherein the or each bristle support segment (9) that cooperates with the cam control surface (20) includes a particular type of bristle, in particular bristles that protrude beyond the remainder of the bristles in the bristles' longitudinal direction and/or bristles of greater stiffness.

19. The brush head as claimed in any one of the preceding claims wherein the or each bristle support segment (9) that cooperates with the cam control surface (14; 20) forms a radially outer peripheral portion of the bristle support (2) and carries radially outer bristles (16) .

20. The brush head as claimed in any one of the preceding claims wherein the bristle support (2) includes at least one rigid, immovable bristle support segment (8) having bristle tufts secured thereto.

21. A toothbrush with a motor drive mechanism and a brush head (1) as claimed in any one of the preceding claims.